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ABSTRACT

This paper examines the institutional history of the United States government's efforts from 1946 to 1950 to gather, rationalize, and communicate to private industry, in the creation of the Office of Technical Services (OTS), the wealth of information that had been generated by scientists during the Second World War. Noting that U.S. information policy during the post-war era reflected a duality of purpose: (1) to gain international superiority in the science and technology sectors; and (2) to promote the flow of such information to small businesses in America, the role of various government agencies leading to the enactment of Public Law 81-776 which mandated OTS is discussed. (Seventy-five endnotes are included.) (NH)

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Merging Foreign and Domestic Information Policy Goals:

The U.S. Government's Office of Technical Services (1946-1950)

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Long Abstract

U.S. information policy during the post-World War II era reflected a duality of purpose: gain international superiority in the science and technology sectors, and promote the flow of such information to small business in America.

To accomplish these dual purposes, Congress and the administration cooperated to create and fund the Office of Technical Services. OTS's job was to communicate the enormous body of scientific and technical research undertaken for World War II to the American private sector.

OTS functioned under the auspices of the Department of Commerce, headed at that time by Henry Wallace. Wallace and several members of Congress wanted OTS to be the vehicle whereby small businesses could compete with the corporate giants. They viewed scientific and technical information as the key resource in the struggle between the giant companies and the much smaller companies.

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Merging Foreign and Domestic Information Policy Goals:

The U.S. Government's Office of Technical Services (1946-1950)

> Keeping up with the enemy's methods of offense and defense is one of warfare's oldest requirements, but it remained for this war to develop a new kind of conquest--the scientific exploitation of the defeated enemy.1

The growth and sophistication of scientific and technical know-how during and after World War II piqued the interest of policy makers in the United States. Information had played a strategic role in waging a high-tech--and eventually, atomic--war. This view carried over to the post-war period, when mainstream U.S. policy makers put their faith in access to scientific and technical knowledge for the survival of industrial democracies. The emerging view of many American policy makers was that the ability of the federal government to organize, evaluate, declassify, and communicate scientific and technical information to American industry was at least as important a service to society as the mere possession of this information. The federal government was the only institution in the U.S. with the wherewithal and technical expertise to perform this function. This research examines the institutional history of the U.S. government's efforts from 1946 to 1950 to gather, rationalize, and communicate to private industry the wealth of information that U.S. and enemy scientists had generated during the war.

World War II stimulated an unprecedented explosion of American scientific research, primarily as a reaction to the success of Axis nations' exploitation of technology to wage war against the Allies.

German and Japanese advances in chemical, metalurgical, optical, and mechanical sciences, coupled with wartime buildups in their industrial capacity, necessitated a rapid growth in the U.S. research in basic and applied sciences. The federal government's financial commitment to science research jumped from about $70 million in 1940 to $700 million in 1944.[2] New defense-related R&D departments sprouted up within the government bureaucracy during the early war years, the principal one being the Office of Scientific Research and Development. Created by Executive Order 8807 on June 28, 1941 to "Serve as the center for the mobilization of the scientific personnel and resources of the Nation," OSRD under the direction of Vannever Bush of the Carnegie Institution of Washington produced over 35,000 documents based on its research efforts.[3]

Enemy technology--in the form of scientific and technical reports--secured by a joint American and British intelligence effort--enabled a more rapid and effective U.S. military buildup in key strategic areas, including atomic warfare. The primary agency responsibility for gathering enemy scientific and technical data during the war years was the Office of Strategic Services' Interdepartmental Committee for the Acquisition of Foreign Publications, or IDC. Even before the Japanese bombed the U.S. naval fleet in Hawaii, high-level intelligence officials in Washington worried about a decrease in the amount of printed material reaching the U.S. from Axis nations. Just two weeks after Pearl Harbor, the head of OSS, William J. Donovan, recommended to President Roosevelt that a new committee be created to promote the circulation of enemy documents and publications throughout the U.S. In addition to OSS representatives, the committee included delegates from

the Office of Scientific Research and Development, the Departments of State, Commerce, Treasury, Labor, Agriculture, War and Navy, the Office of Facts and Figures (later the Office of War Information), the Board of Economic Warfare, the Office of Inter-American Affairs, and the Library of Congress.[4]

Among the items IDC procured were enemy books, newspapers, and general and specialized journals for U.S. government agencies in need of intelligence. By 1942, from outposts in Portugal, Sweden, Turkey, Egypt, and to a lesser extent Switzerland, IDC officers regularly channeled about 350 publications, representing 3,000 pages of economic, political and scientific literature through the London office to Washington.[5]

The Library of Congress was one the principal beneficiaries of the IDC's work. It received

> ...several hundreds thousand pieces (books, pamphlets, journals, newspapers) in the original, as well as additional hundreds of thousands of pieces on [micro]film...[6]

The Library placed "material of general interest secured by the Committee" in the War Agencies Reading Room or the Microfilm Reading Room, "there to be generally available to accredited representatives of all the war agencies,"[7] clearly an interesting and seemingly unusual function for a library to perform, even in wartime.

The accomplishments of IDC's acquisitions efforts are noted in the 1944 Library of Congress Annual Report, which observed that in the previous year "the Library received through the Committee microfilm copies of 138,468 separate issues of foreign publications...together with 79,432 of the originals from which the films were made."[8] The number of microfilm reels sent to the Library of Congress by IDC jumped

from 2,167 in 1944 to 2,854 in 1945.[9] And when the outcome of the war became clear, OSS's Interdepartmental Committee's mission expanded to include expediting the removal from Germany particular kinds of political and scientific information (that had "been built up on true geopolitical principles with an eye to attacking neighboring countries"[10]) from Germany to strip that nation of its information-wherewithal to ever again wage war.

Even before the end of the war, many IDC-procured documents were being circulated in the U.S. by the Office of the Alien Property Custodian, which had seized the copyrights to the major European journals brought to the U.S. by OSS's committee.[11] In cooperation with the private sector, the APC had the materials and journals "of public interest" republished for circulation in the U.S. In all, the APC distributed seven circulars during the war, listing materials available in the reprinted format. Though the overall effectiveness of the program is difficult to evaluate, the contribution of IDC-gathered and APC-reprinted German documents to specific projects, including and perhaps especially the Manhattan Project, is certain.[12]

Despite the work it performed, the IDC was not without its critics, many of whom depended on the committee for intelligence gathering. Indeed, the principal difficulties for the IDC (aside from gathering enemy documents) stemmed from the number of "masters" it served throughout the federal government, each with needs seemingly more pressing than those of other committee members. Thus it was that a new intergovernmental "Committee" was formed toward the end of the war, which, in terms of gathering scientific and technical information, made an even greater significant contribution toward gathering enemy scien-

tific and technical information. Established in January, 1945, the Technical Industrial Intelligence Committee (TIIC)[13], built on the foundation laid by previous U.S./U.K efforts. In 1944, the British and American chiefs of staffs in London organized the Combined Intelligence Objectives Subcommittee to prepare for securing information that one business magazine characterized as "the spoils of war."[14] Among the U.S. members of CIOS were many of the agencies who participated in the OSS's interdepartmental committee, including the OSS itself, the Office of Scientific Research and Development, the War and Navy Departments, as well as representatives from the War Production Board, and the Foreign Economic Administration.[15] Teams of technical experts were sent into Europe by the TIIC to accompany the Allied invasion forces to gather S & T documents:

> While the smoke of D-Day was still in the air, handpicked teams of British and American specialists were hurried into liberated areas to ferret out scientific and technical facts. As the Germans were pushed back, these investigators followed in their tracks.16

The cooperative effort soon broke down, and the work of COIS's "technological sleuths" who had begun a "thoroughgoing exploration of the Reich's whole industrial system" would be continued by the TIIC, a wholly-American enterprise under the U.S. Joint Chiefs of Staff. TIIC spearheaded the "non-military" effort to learn more about enemy technology developed "under the pressure of war's necessity..."[17], its mission being to

> ...to send American industry experts into Germany to gather scientific and technical information for use in the war against Japan. After VJ-day, it was decided to keep the work going, primarily to seek out information useful to American peacetime industry.18

The TIIC comprised almost twenty subcommittees covering the principal areas of German industry.[19] The "several hundred scientists and technicians, borrowed from industrial concerns in the United States and colleges"[20], supervised the work of six hundred Germans operating fifty microfilm units.[21] According to the 1946 Department of Commerce annual report,

> [TIIC's] task was to select from the three and a half billion page total an expected three and half million pages of material valuable to United States industry. Microfilms of these documents were to be shipped to the United States. ...By the end of the year [1945], several hundred reels of microfilm had been sent back to the nited States.[22]

By war's end, the U.S. government, through the combined efforts of OSS's interdepartmental committee and the Joint Chiefs of Staff's Technical Industrial Intelligence Committee, accumulated--and continued to add to--a vast collection of literature outlining in detail state-of-the-art U.S., British, German, and Japanese scientific and technical information. War-related research in the U.S. and abroad had produced thousands of new discoveries with a wide array of potential non-military applications, ranging from uses for synthetic substitutes for rubber to harnessing the power of the atom. American corporations eagerly awaited the chance to convert their vast war-time research and development experience to producing commercial and consumer goods for domestic and foreign markets. While World War II had left factories--indeed, the entire economies' of Europe and Japan--in shambles, the war catalyzed research and development in the U.S., facilitating a rapid buildup in the nation's production capacity.

American policy makers, too, supported the view that the strength and competitiveness of America's peace-time economy hinged on an

aggressive policy of communicating the latest science and technology information to American industry. The federal government, they surmised, had an obvious stake in promoting the flow of scientific and technical information, not only during war-time, but in peace-time too. Newly-sworn in President Harry Truman assigned the task of turning over U.S. and enemy technical data and documents gathered or developed during and just after the war to yet another interdepartmental agency, created on June 8, 1945 (and expanded in August) specifically for this task. Executive Orders 9568 and 9604 outlined the tasks of the new Office of the Publication Board, chaired by the director of the Office of War Mobilization and Reconversion (OWMR), and comprising the attorney general, the secretaries of Agriculture, Interior, Labor, and Commerce. Defense-agencies were invited to send representatives in the form of liaison officers to Publication Board meetings.[23]

To handle the "spadework" of poring through and selecting documents for declassification, a Committee on the Release of Scientific Information (CORSI) was formed within the Office of the Publication Board. Chaired by Patent Commissioner Casper Ooms, CORSI had representatives from the Office of Scientific Research and Development, the War, Navy, State, and Justice Departments.[24] The Departments of War and Navy were the "ultimate arbiters" at CORSI as to "what facts to release."[25] In reality it was the Department of Commerce that was at the center of this organizational maze. Under the watchful eye of Secretary Henry Wallace, Commerce provided the leadership for what Wallace argued was a key ingrediant in America's future prosperity: communicating to American industry the new-found wealth of science technological information. During the war, a Commerce representative had sat on

the Office of Strategic Service's Interdepartmental Committee, and by January, 1946 the department assumed full administrative responsibility for the work performed by the TIIC (renamed the Technical Industrial Intelligence Branch, or TIIB), overseeing that group's work as it pressed beyond the U.S.-occupied parts of Germany into the Russian zone in the early months of 1946.[26] Even before the transfer of TIIC to Commerce, the department's role in this area had been solidified when Publication Board director Fred Vinson had appointed as his vice chairman Wallace at Commerce.[27] At that time, Vinson requested that Wallace assign some Commerce employees to carry out the staff work of the Publication Board, wherein Wallace created the Office of Declassification and Technical Services[28], to

> ...effect the declassification of scientific and technical data that can be released for public benefit and [promote] its maximum use by business and industry; [to] serve as a clearing house for the collection, editing, publishing, and dissemination of scientific and technical data for the purpose of promoting economic expansion and development; [to] collect, screen, appraise, process in suitable form, and transmit to this country technical and scientific industrial intelligence obtained from enemy and ex-enemy countries...[29]

Thus, by early 1946, Commerce through its ODTS had oversight responsibilities for the Office of the Publication Board, Commerce's National Inventors Council, the War Production Board's Office of Production Research and Development, Ooms' CORSI, and the Technical Industrial Intelligence Branch.

Wallace appointed the 36-year-old chief engineer of the National Inventors Council, John C. Green, to direct the work of the staff initially assigned to ODTS. A Business Week report published in September, 1945 described the job which lay before Green's agency:

> Wallace's staff will consult with a committee on release of scientific information. That group will include representatives of the Commerce, Justice, War, and Navy departments, and the Office of Scientific Research & Development.
>
> ...After consultation, the staff will then advise the director of CWMR who in turn will go into huddle with the Publication Board before making any final recommendation to the Secretaries of War and Navy.30

Documents selected and approved were processed by "a staff of 20 technical experts, trained in the preparation of terse, accurate abstracts. Among them, these abstractors can translate from 15 languages..."[31] Because the Commerce Department lacked space to accommodate the volume of items being entered into the system, once processed a document was deposited in the Army Medical Library, the Library of the Department of Agriculture, or the Library of Congress (which received a majority of the "PB" documents, and within three years took over the other two federal libraries' "PB" collections[32]). By the end of 1945, the "PB" collection had grown to 27,000 documents.[33] Orders for copies of document were channeled through the Office of Declassification and Technical Services staff at Commerce to the libraries, which agreed to make microfilm or photostat copies of documents in their "PB" collection for fifty cents to two dollars on a demand basis. Despite the somewhat clumsy system, during its first six months ODTS filled nearly a quarter million requests for Publication Board documents, yielding over $100,000 in sales. The Photoduplication Service of the Library of Congress reported that the number of copies requested through the Service more than doubled--from 8,391 in 1945 to 18,622 in 1946--just after the Publication Board (and the U.S. government's Technical Oil Mission of the Petroleum Administration for War) made its documents available to the public through the Library.[34]

To promote and facilitate access to the "PB" collection, in early 1946 ODTS began issuing the Bibliography of Scientific and Industrial Reports, a weekly publication listing titles and abstracts for the material entered in the Publication Board's collection. BSIR indexed documents by subject ("CHEMICALS AND ALLIED PRODUCTS," "ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES," "FUELS AND LUBRICANTS," etc.), and by country of origin ("GERMAN," "ITALIAN," "JAPANESE," and "UNITED STATES"). Each entry included an abstract, and the name of the document's source agency ("ARMY AIR FORCES," "BRITISH INTELLIGENCE OBJECTIVES SUB-COMMITTEE," "TECHNICAL INDUSTRIAL INTELLIGENCE COMMITTEE," etc., as well as the names of war-time enemy agencies--"JAHRBUCH DER DEUTSCHEN LUFTFAHRTFORSCHUNG," "ZWISCHENPRODUKTE KOMMISSION," "ZENTRALE FUR WISSENSCHAFTLISHES BERICHTSWESEN UBER LUFTFAHRTFORCHUNG" etc.).[35] A sample entry reads as follows:

> PB 30962. KLANGFILM G.M.B.H., GERMANY. Stereophony. (BIOS Halstead Exploiting Centre Rept 10333) May 1946. 3 p. Price: Microfilm-$1.00 - Photostat-$1.00
> Sterophony signifies hearing of a true acoustic reproduction with two ears. The usual sound reproducing apparatus in theatres has only one single passage for reproduction and consequently permits only one-ear hearing. A two-ear true acoustic reproduction can be achieved by employing two passages in the transmitting channels, completely separated from one another, and each of which operates its microphone and amplifier. Attempts were then made to achieve true acoustic effects in the reproduction by loud speakers, by the use of two or more units which are fed by separate systems of reproduction. The picking up of the sound is achieved by direction microphones and by two separate and individually regulated amplifier ways. For recording on film, the 2 mm sound track is divided so that the tone recordings produced by two separately modulated light-ray control units of the two transmission ways are arranged besides [sic] each other. For reproduction in a theatre, two two halves of the sound track are explored by two separate photoelectric cells and the audio frequency alternating currents so produced are sup- plied to two separate amplifiers to the two loud speaker units. The arrangement may be one common deep-pitch loud speaker in the center of the theatre, and two high-pitch loud speakers at the sides. This represents an increase in naturalness and improvement in quali-

> ty. It has not yet been put into practice because of the cost of reconstruction of the repro-duction equipment, providing of two amplifier systems and the fitting of special types of light and sound apparatus with a double exploring device.36

By mid-1946, ODTS had issued 25 issues of BSIR, providing listings to 26,000 documents. Three thousand regular subscribers had paid the $10 annual subscription fee, and another 1,000 single copies of BSIR sold per week.[37] Despite the high demand for Publication Board documents by private industry, and even though ODTS "has demonstrated the value to Government and to business of bringing together at one point all Federal resources of scientific and technical information"[38], the procedure for filling orders for documents remained slow and awkward to administrate. In its 1946 annual report, Commerce indicated that to improve the service, it would take a legislative mandate to broaden the function of ODTS, enabling it to streamline that operation and thus improve the service to the public.

From its beginnings as the Office of the Publication Board, a number of representatives and senators in the U.S. Congress endorsed and strongly supported the ODTS-function. Interestingly, the more enthusiastic of these legislators supported the concept behind ODTS because it made information about science and technology available to American small businesses, which had a fraction of the research and development capacity of the nation's huge multinational, conglomerate companies. These legislators wanted to keep larger corporations from monopolizing the nation's newly developed industrial capacity. Even before the explosion of atomic bombs over Hiroshima and Nagasaki, some American lawmakers were searching for ways to make small business "research conscious," and to circumvent "the present trend toward monopo-

ly, restricted competition, loss of opportunity for new enterprises, and the stagnation of competitive industrial growth."[39] To this end, on the day after President Truman created the Publication Board by executive fiat, Senator William Fulbright introduced Senate Bill 1248 to establish a "Bureau of Scientific Research," an expanded, funded, and permanent, version of the Publication Board wrought by Truman's executive order. Specifically, Senate Bill 1248 would:

> ... promote in the national interest the fullest and speediest introduction of new techniques in science and invention, and in manufacturing, communication, and other phases of production activity;
>
> ... promote the maintenance of free enterprise by making available to small and medium-sized business scientific and technical inventions products, and processes;
>
> ... establish a central scientific and technical office to assure maximum use of new inventions, products, and processes;
>
> ... compile and maintain a comprehensive inventory of the findings and other pertinent data resulting from federally financed scientific research and development, and of other information on scientific and technical advances in this country and abroad, and to make such scientific and technical information available to the public...40

The new bureau envisaged in Fulbright's bill would seek to exploit the boom in war-related scientific and technical information, in much the same manner as was Commerce's ODTS. The primary beneficiaries of the Fulbright legislation were to be small businesses. Whereas similar efforts during the war supposedly were aimed at helping small businesses, the new peace-time agency would need government funds to counter

> the influence of the dollar-a-year men in [government] agencies who actually represent large industries which would be adversely affected through competition that would develop if certain of these [new] ideas were permitted to enter the industrial field.41

Fulbright's bill was assigned to a subcommittee, and hearings on the bill and a number of other related science-bills were scheduled for later that fall. To publicize the hearings, the Senate's Subcommittee on War Mobilization published Senate Document No. 92 ("Legislative Proposals for the Promotion of Science") on September 28, 1945, summarizing a number of the key proposals being considered by subcommittees of the Senate's Committee on Military Affairs and Committee on Commerce. Each of the proposals either would promote research or the communication of science and technical information. Thus, even as Green and his growing cadre of staffers at Commerce undertook to carry out the tasks outlined in Truman's executive orders (initially with only an annual budget of $50,000, and even those dollars had to be transferred from the Office of War Mobilization and Reconversion), Congressional subcommittees by mid-October were undertaking joint hearings to consider a wide array of proposals that would give legislative sanction, and funding, to "the development of our scientific and technical resources..."[42]

A star witness at the October hearings was Maury Maverick, chairman and general manager of the Smaller War Plants Corporation, one of the many specialized agencies operating during the war under the War Production Board. The SWPC had been established in June, 1942, "to ensure that small business concerns will be most efficiently and effectively utilized in the production of articles, equipment, supplies, and material for both war and essential civilian purposes."[43] In his testimony before one of the subcommittee, Maverick advocated the view that the federal government had a vital postwar role to play in promoting the interests of "little business," specifically, by

acting as a countervailing force against giant corporations' "monopoly of science"[44];

> The little businessman, busy with his sales problems, his personnel problems, and problems of management, just hasn't time to ferret out what he needs from the maze of already accumulated nonconfidential information to help him knock off his manufacturing problems. Most of them know that new products have been perfected, but having so many things to do, he doesn't have time to locate the new things. Let's let him really share in the Government research and, in this way, realize a greater return on the money so publicly spent.[45]

Secretary Wallace himself testified that

> small business, without technical research facilities, is severely handicapped in entering, or in continuing to compete in many industries... As technology advances, a lack of [this new] service would carry with it the very undesirable by-products of monopoly, other forms of restricted competition, and loss of opportunities for new enterprisers.[46]

What Maverick, Wallace, Fulbright and other supporters of Senate Bill 1248 wanted to achieve for small business had far-reaching implications for users of science and technical information on the whole. Maverick, in his testimony, advocated progressive access-oriented policy, admonishing the members of the subcommittees to reverse what he called the government's "hide-out policy"--wherein it generates information through research but doesn't distribute it. What was needed was "a vigorous mechanism to enable a thorough dissemination of the results of the research brought about through the expenditure of the millions of dollars of taxpayers' money." Otherwise, according to Maverick, Americans

> will still have the same old antiquated "try and get it" method of making the results of Government paid-for-research available to an extremely limited number that ought to have it... We must now adopt as a principle in the beginning that the results of this Government-paid-for research must not only be available to all--it must be accessible to all, indeed, the information should be widely distributed, it should be open and free, and should be available out in the field....[47]

As part of his testimony, Maverick presented the findings of an Smaller War Plants Corporation survey of American companies that addressed a number of the pertinent science and technology issues before the subcommittees. The purpose of the survey, apparently the brainchild of the chairman of the Subcommittee on War Mobilization of the Committee on Military Affairs, Senator Harley M. Kilgore[48], was to ascertain the opinion of a "cross-section" of American industry on the government's role in the promotion of science. Five SWPC "technical consultants" surveyed 200 manufacturers of varying sizes, located in 32 states in all regions of the U.S. Per Senator Kilgore's instructions, SWPC's team of surveyors asked the 200 manufacturers seven specific questions, the fifth and sixth relating directly to the issue of information dissemination:

> 5. To what extent should the Federal Government undertake to disseminiate nonconfidential scientific and technical information:
>
> (a) Relating to its own research and development activities?
> (b) Obtainable from other sources?
>
> 6. Should such nonconfidential information be made available to industry through:
>
> (a) Existing agencies or departments of the Federal Government?
> (b) A central scientific agency of the Government?
> (c) Other?

Items one through four addressed the question of how "the Federal Government should support [basic] research" (item seven offered the opportunity to include "Other comments")[49].

While most of the surveyed manufacturers generally favored the federal government pursuing an active role in promoting basic research, an overwhelming majority of respondents--ninety-three per-

cent--"want to see the results of Government research disseminated as thoroughly as possible."[50] Thus, concluded Maverick, both "the bigs and the littles" of American manufacturers strongly favored a role for the federal government in disseminating the findings of tax-supported research.[51]

Maverick offered to the subcommittee the SWPC's own Technical Advisory Service as a model of a successful dissemination program:

> I must emphasize with considerable pride that the know-how of distribution and dissemination is already established in our TAS; indeed, we have the skeleton organization already. With our limited funds, we have done a big job in this war. In any event, the idea is firmly established...
>
> [The] swift pooling of technical knowledge represents a radically new conception of the part a Government agency may play to assist small business in an industrial society.[52]

Maverick's own experience, and his testimony at the October subcommittee hearings, apparently so impressed subcommittee members that SWPC's Technical Advisory Service became yet another war-time agency slated by an amended version of Senate Bill 1248 to become a part of the new DoC bureau. The revised version of the bill also had considerable input from the Secretary of Commerce himself, who forwarded a number of suggestions to the Chairman of the Senate Commerce Committee in November. To take up these, and other suggested revisions in the Fulbright bill, a new round of hearings was scheduled for mid-December, 1945.[53]

To publicize the December hearings, the Senate subcommittee distributed

> ... some 4,000 copies [of the bill] ... to scientific and trade journals, organizations, and so forth, during the past four months [September-December]. Also, a notice of these hearings was sent to some 300 or 400 scientific and trade journals, general and economic publications, and other groups which might be interested, as well as to all newspapers and syndicates, for general release to the public...so that anyone

> who may be interested in appearing in behalf of, or in opposition to, the bill would be afforded an opportunity to do so...54

Among the witnesses appearing in support of Senate Bill 1248 during the December hearings were Secretary Wallace of Commerce, and John Green, by this time directing ODTS's efforts to cull through war-related research for general dissemination. In Secretary Wallace's closing comments at the hearings, he offered his estimation of the impact passage of Senate Bill 1248 could have on the post-war economy, and on the Department of Commerce:

> ...I believe that the Fulbright bill is one of the important pieces of legislation now before the Congress. The subject is not a spectacular one. Yet, I know of no way in which such large and assured benefits in the way of improved living standards can be more surely achieved as by this kind of technological service to industry.
>
> ...It would make many of the individuals in the Department feel that they had a more definite purpose in life ant that they were getting a much larger psychic income from their activities if a bill of this kind could be enacted.55

After the hearings, Fulbright again revised his bill, giving the proposed bureau its new name-designate, "Office of Technical Services" (OTS) "to avoid any possible confusion with the purposes and functions of the proposed National Science Foundation..."[56] In January, the subcommittee recommended passage of the Fulbright bill to the full Commerce Committee, which, in turn, reported the bill "without dissent" to the full Senate.[57] In early February, to marshall support for the bill in Congress, the Department of Commerce sent a memorandum to the Senate, arguing the position that foreign competitors--particularly the Canadians and British--were undertaking such efforts, "and that American small business cannot hope to compete successfully in international markets without assistance in the collection and application of the

latest developments in science, engineering and technology."[58] Fulbright also gave public speeches in support of Senate Bill 1248, noting as he did in April, 1946 that the idea for the new technical services agency

> grew out of my experience and the needs of my constituents and State... We have a lot of raw materials in my State, but we ship most of them out to be processed and manufactured elsewhere... If our local people are going to operate their own small businesses, they have to be able to get the latest technical information...
>
> This is a small business bill -- one of the most practical, constructive things proposed for small business. It is real brass tacks help -- no loan, subsidy, or regimentation. Something the small business man can use without any strings attached to help himself.[59]

Despite these efforts, the Fulbright bill died in the full Senate.

Despite Congress' failure to pass Senate Bill 1248, Fulbright's bill helped focus the national debate on the issue of the federal government's role in promoting the flow of scientific and technical information. Through administrative orders--in essence, using mirrors and lights--Secretary Wallace at Commerce was able to achieve on a short-term basis many of the goals set forth in Senate Bill 1248, principally by reorganizing and adding to the Office of Declassification and Technical Services under John Green. As a result, the staff at Commerce devoted to carrying out the ODTS function had grown rapidly, from the initial 14 in September, 1945 to 247 in March, 1946. When Congress failed to mandate (and thereby appropriate funds for) the creation of an Office of Technical Services, Wallace on August 28, 1946 amended Commerce Order No. 5, transforming the Office of Declassification and Technical Services into the Office of Technical Services, with Green continuing as director.[60]

During the first few years, neither its funding nor OTS's administrative structure were stable, reflecting a degree of uncertainty both in Commerce and Congress over the agency's long-term role. OTS initially comprised five divisions, (1) the Technical Industrial Intelligence Division (formerly the TIIC), (2) the Industrial Research and Development Division (formerly the Office of Production Research and Development in the War Production Board--renamed the Civilian Production Administration), (3) the Inventions and Engineering Division (comprising the National Inventors Council and Inventors Service from DoC and the Technical Advisory Service of the Smaller War Plants Corporation), (4) the Information Staff in the Director's Office, and (5) the Bibliography and Reference Division, also known as the Library and Reports Division, or just the Library Division. During the 1947-48 fiscal year OTS's divisions dropped to four, to include (1) the Director's Office, (2) the Review Division, (3) the Library Division, and (4) the Inquiry Division. In the 1948-49 fiscal year the Library Division remained constant, while a new Analysis Division absorbed the functions of the Review Division and Inquiry Division.

In large part the changes in OTS's structure were the result of two factors. First, what had been a flood of material being processed by OTS just after the war slowed to a comparative trickle by the late 1940's. While a relatively small backlog of enemy materials would remain for some time, on June 30, 1946 the "field work" of gathering German war-time technological information officially ceased.[61] Nevertheless, according to a Business Week report in January, 1947 Green continued to encourage American technical experts from industry

to "acquire precious technical knowledge from German laboratories." Green told Business Week that, while

> Hundreds of these (German) secrets have been uncovered... there are hundreds more... The opportunity to enter any factory, see any documents, inspect any equipment and interrogate any expert cannot last indefinitely.[62]

Second, by not passing Senate Bill 1248, the U.S. Congress failed to appropriate the necessary funds to put OTS on solid financial footing. When Wallace created OTS by administrative order in 1946, he had to transfer funds from Commerce's Office of Declassification and Technical Services to the new OTS account to carry out the "Editing, publishing, and dissemination of enemy [principally German] technical data and processes." The bookkeeping change gave the new agency just over $1 million to spend in its first year of operation.[63] For the 1947 budget year Congress already had appropriated $2,685,000 for ODTS, apparently giving Commerce the funds to keep the new agency alive, and perhaps even thrive.[64] Congress, however, was reluctant to spend taxpayer dollars for a function it had yet to mandate or even sanction through legislation, and thus reduced the available funds to OTS that year to "one-quarter its appropriations of the preceding fiscal year."[65] To complicate matters for OTS, it generated no revenue from sales of technical documents, as orders were forwarded to the three archival libraries that actually handled the reports. Thus, even in 1946 when, during a six-month period when over 250,000 orders were filled for documents, OTS itself received no remuneration.[66]

Despite the lack of revenue from sales, the cutbacks in appropriations, and the overall lack of support from Congress, the work of the Office of Technical Service continue under the premise that American

industry--particular small firms--needed access to research performed under war-time conditions. Teams of technical experts under contract to OTS continued to pore through German and Japanese documents, culling out and entering what they analyzed as being useful to American industry.[67] By the end of 1947, over 70,000 technical reports were abstracted and put in the OTS system.

But the nagging lack of funds meant the OTS staff could not continue indefinitely at that pace, or without some inevitable cutbacks in communication to American industry of the content of the growing warehouse of technical material. In 1949, OTS's published index, the Bibliography of Scientific and Industrial Reports, became a monthly rather than weekly publication (and renamed the Bibliography of Technical Reports). And while over ten thousand documents were entered into the "PB" collection that year, staff limitations restricted the number that were actually abstracted to about thirteen percent of the items.[68]

As a result of these problems, Commerce in 1949 pressed Congress to consider a bill that would legislatively mandate the clearinghouse function OTS had performed under administrative order for three years.[69] In 1950, in part to gain support in Congress for the bill (S. 868) that would give OTS a Congressional sanction, OTS administrators publicly recommitted the agency to serving small business. To this end, OTS began publishing a new "Technical Reports Newsletter" to highlight "technical opportunities for small business," and dropped the price of an annual BTR subscription from ten to five dollars.[70] The measures were a success, at least to the degree that they may have contributed to Congressional action later that year, enacting Public Law 81-776 mandating that Commerce

> ...make the results of technological research and development more readily available to industry and business, and to the general public, by clarifying and defining the functions and responsibilities of the Department of Commerce as a central clearinghouse for technical information which is useful to American industry and business.[71]

Specifically, the new law directed the Secretary of Commerce "to establish and maintain within the Department of Commerce a clearinghouse for the collection and dissemination of scientific, technical, and engineering information..."[72] With the Congressional blessing of Public Law 81-776, the Office of Technical Services henceforth could receive a portion of the income from sales of technical documents. Indeed, according to Congress, OTS would have to generate sufficient income by such means that "the general public shall not bear the cost of publications and other services which are for the special use and benefit of private groups and individuals."[73]

What Congress said in Public Law 81-776 was simply this: it approved of the service OTS proviced, but the agency would have to pay its own way. Nevertheless, the effect of the Congressional approval was immediate. With the Congressional action came a second flood of documents into the OTS system. This time, however, the flood came not from foreign documents but from U.S. federal agencies, including the National Advisory Committee for Aeronautics (now NASA), the U.S. Atomic Energy Commission, the Naval Research Laboratory, and the Tennessee Valley Authority. In addition, it received materials from a wide range of academic and other interests that received federal funds for the performance of research.[74]

CONCLUSION/SUMMARY

With the enactment of Public Law 81-776, Congress had sanctioned more than just another agency, specifically the Office of Technical Service. It was sanctioning the role of the federal government in providing an information service, integrating foreign and domestically produced technical reports into a communiation system whereby private individuals, as well as other government agencies, could gain access to the growing wealth scientific and technical information. Congress recognized, as people like Wallace and Fulbright had earlier, that the power of this information rested not in the gathering of the materials, but in the circulation and communication of the information. The power released in that circulation was, in their view, as important to the survival of a modern and free society as was the circulation of political information.

It is also true that the evolution of U.S. information policy after World War II reflects a kind up dualism in outlook: first, in the domestic sphere, American policy makers were anxious to help small businesses compete for market share with the giant conglomerates they so mistrusted; secondly, those same policy makers wanted to ensure that the U.S. would be the dominant information society in the international arena for the foreseeable future. Not trusting the huge corporations, a number of decision makers in government seemed more than ready to have small business play a leading role toward accomplishing this international agenda, and a role for government itself to play by communicating the availability of technical information resources in its possession to small businesses. While this commitment and effort over the years has seemed more unorganized than organized, more confused than

clear[75], in 1950 Congress and the Administration agreed that the federal government should play a central role in coordinating the collection and communication of scientific and technical information.

ENDNOTES

1 Business Week, September 22, 1945, p. 49.

2 "Hearings on Science Legislation," U.S. Senate, Committee on Military Affairs, Oct. 8, 1945

3 United States Government Manual, 1945 (1st ed.), p. 86; Library Journal, October 1, 1946, p. 1314.

4 Robin Winks, Cloak and Gown: Scholars in the Secret War, 1939-1961 (New York: Morrow, 1987), p. 102.

5 Ibid, pp. 102-103; Pamela Spence Richards, "Gathering Enemy Scientific Informaiton in Wartime: The OSS and the Periodical Republication Program," Journal of Library History 16:2 (Spring 1981), p. 258.

6 Reuben Peiss, "European Wartime Acquisitions and the Library of Congress Mission," Library Journal June 15, 1946, p. 864. Peiss at the time served as the Chief of the Library of Congress Mission in Frankfurt, Germany.

7 Library of Congress Annual Report, 1945, p. 27.

8 Ibid, 1944, p. 65.

9 Ibid, 1945, p. 28.

10 Peiss, p. 869.

11 Ibid, p. 873. The APC was established in 1942 by Executive Order 9095, and operated under the auspices of the Office of Emergency Management.

12 Richards, pp. 257-259, 262.

13 Critical reports of the tension within IDC by this time had leaked to the press, which reported that "Hints are heard that if the Office of Strategic Services had been up to its job, there would have been no need for the new organization." Business Week, Jan. 13, 1945, p. 8.

14 Ibid, Sept. 22, 1945, pp. 49.

15 Ibid.

16 Ibid.

17 Quoted in Business Week, Jan. 13, 1945, p. 7.

18 Department of Commerce Annual Report, 1946, p. 22.

19 Business Week, Sept. 22, 1945, p. 50.

20 Washington Post, Feb. 23, 1946.

21 Business Week, May 18, 1946, p. 19.

22 Ibid, p. 24.

23 Ibid.

24 Department of Commerce Annual Report, 1946, p. 18.

25 Business Week, Sept. 22, 1945, p.52.

26 New York Times, March 14, 1946, p. 44:2.

27 Business Week, Sept. 22, 1945, p. 52. Wallace was known for his adherence to the principles of the New Deal, perhaps to a far greater extent than Roosevelt himself. Promoting the flow of scientific and technical information would not be unlike Wallace's efforts while Secretary of Agriculture to promote the dissemination of agriculture information to farmers. For a general discussion on Wallace's New Deal views see Richard Walton, Henry Wallace, Harry Truman, and the Cold War (New York: Viking, 1976), and Wallace's autobiographical Price of Vision: The Diary of Henry A. Wallace 1942-1946 (Boston: Houghton Mifflin, 1973).

28 Department of Commerce, Order No. 5. Issued Dec. 11, 1945.

29 United States Government Manual, 1946, p. 320.

30
Business Week, Sept. 22, 1945, pp. 51-52.

31
Department of Commerce Annual Report, 1949, p. 19.

32
Library of Congress Annual Report, 1948, p. 46.

33
Department of Commerce Annual Report, p. 19.

34
Library of Congress Annual Report, 1946, p. 257.

35
BSIR, September 27, 1946, Vol. 2, No. 13.

36
Ibid, p. 1007.

37
Department of Commerce Annual Report, 1949, pp. 18-19.

38
Ibid, p. 20

39
Hearings: "To Establish an Office of Technical Services in the Department of Commerce," Dec. 12-14, 1945, Senate Committee on Commerce, pp. 11-12. Margaret Blanchard's monograph on the Hutchins Commission ("The Hutchins Commission, the Press and the Responsibility Concept," Journalism Monographs 49 [May 1977]), indicates a similar theme with respect to the contemporary thought on the industry of newspaper publishing. Newspaper critics "labeled the press a representative of established commercial interests and of the upper socio-economic class, out of step with the general population's wishes for society while reflecting the biases of its owners in its presentation of the news" (p. 8).

40
S. 1248, in Senate Document 92, 79th Congress, 1st Session, pp. 12-13.

41
In addition to technical information, a number of the subcommittees' members hoped to promote basic or "pure" research through other legislation.

Like many bills, S. 1248 probably was "staff-driven" to the extent that the ideas put forth in the bill appear to have originated with William L. Reynolds, a member of Fulbright's staff. See Reynolds' memorandum to Fulbright, "Suggestion for new bill - Scientific Research," June 6, 1945, in which he accuses the Office of Production Research and Development and the National Inventors Council of not serving the interests of small business. To better understand Reynolds' role in developing S. 1248, see Fulbright's letter to Maurice Nelles, Chief Consultant for the Office of Production, Research, and Development, July 23,

1945. Both of these documents are in the J. William Fulbright Papers, Series 89:2; Box 7, Folder 1, University of Arkansas Special Collections (henceforth referred to as the Fulbright Papers).

42 "Hearings on Science Legislation," U.S. Senate, Committee on Military Affairs, Oct. 8, 1945, pp. 1-2.

43 In addition to technical information, a number of the subcommittees' members hoped to promote basic or "pure" research.

44 U.S. Government Manual, Summer 1944, p. 120.

45 "Hearings on Science Legislation," U.S. Senate, Committee on Military Affairs, Oct. 8, 1945, p. 367. One of the key witnesses at the October hearings was Secretary Wallace from the Department Commerce.

46 See draft of Wallace's prepared statement, dated October 12, 1945, in Fulbright Papers, 89:2, 7:3.

47 "Hearings on Science Legislation," p. 373.

48 Ibid, pp. 371-372.

49 Ibid, p. 374.

50 Ibid, pp. 374-375.

51 Ibid, p. 376.

52 Ibid, p. 371; the entire study, titled "Industry Opinion on Proposed Science Legislation," is included as Exhibit No. 1 of the report, pp. 381-410.

53 Ibid, p. 377.

54 Hearings: "To Establish an Office of Technical Services in the Department of Commerce," Dec. 12-14, 1945.

55 Ibid, p. 19.

56 Senate Report No. 908, 79 Congress, 2d Session, p. 18.

57 79th Congress, 2nd Session, Report No. 908.

58 Draft copy of a memorandum from the Department of Commerce, dated February 6, 1946, pp. 3-4, Fulbright Papers, 89:2, 10:4.

59 See outline of Fulbright speech, April 4, 1946, in Fulbright Papers, 89:2, 10:5.

60 Department of Commerce, Order No. 52. Issued Aug. 29, 1946.

61 Department of Commerce Annual Report, 1947, p. 21.

62 Business Week, Jan. 27, 1947, p. 58.

63 Department of Commerce Annual Report, 1946, p. 22.

64 Senate Report No. 908, Table 1, p. 7.

65 Department of Commerce Annual Report, 1948, p. 35.

66 Krishna Subramanyam, Scientific and Technical Information Resources (New York: M. Dekker, 1981), p. 102.

67 Ibid. Also see the special report by the President's Science Advisory Committee, "Science, Government, and Information," January 1, 1963 (Washington: GPO), p. 40.

68 Department of Commerce Annual Report, 1949, p. 22.

69 "NTIS General Background." Unpublished report prepared by National Technical Information Service staff, Department of Commerce, 1988.

70 Department of Commerce Annual Report, 1949, p. 69.

71 Public Law 81-776, 81st Congress, 2d session, 1950.

72
Ibid, sec. 2.

73
Ibid, ch. 936, par 3, 64.

74
Subramanyam, p. 102.

75
In 1964 and 1970 the OTS function was overhauled, repleat with agency name changes, first to the Clearinghouse for Federal Scientific and Technical Information, then to its current name, the National Technical Information Service. During the 1960s a brief effort was mounted to privatize CFSTI, and during the 1970s and even moreso during the Reagan Administration, private sector interests and even some policy makers wanted to get government out of the business of collecting and disseminating government funded and declassified technical reports to the public. In 1988 Congress forbade an Administration effort to privatize NTIS with language incorporated in the Trade and Competitiveness Act, signed by Reagan after a veto of an earlier version that had incorporated a so-called "plant closing notice" provision. By his signature on the trade bill in 1988, however much he opposed the position ideologically and philosophically, Reagan took the political step that affirmed the government's central role in collecting and disseminating scientific and technical information.